

OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

James M. Donald, Ph.D.
**Chief, Reproductive and Ecological
Toxicology Unit**

OEHHA'S ROLE IN PROTECTING THE PUBLIC FROM MERCURY CONTAMINATION

- Issue sport fish consumption advisories for state's water bodies – water, food
- Develop toxicity guidelines
 - Toxic Air Contaminants – air
 - Children's Environmental Health Protection Program (SB 25) – air
 - Public Health Goals – drinking water
- Identification and warnings of toxic effects
 - Proposition 65

SPORT FISH CONSUMPTION ADVISORIES

- Fish consumption is the primary non-occupational exposure to methylmercury
- Advisories are associated with runoff from mercury or gold mining
- First California advisory was due to methylmercury in striped bass in the Delta (1971)
- Most recent state advisories have included consumption restrictions based on methylmercury in sport fish
- 12 out of 26 advisories include consumption restrictions based on methylmercury

CONSUMPTION ADVICE FOR SPORT FISH CONTAMINATED WITH METHYLMERCURY

- Protect frequent consumers from neurotoxic effects of methylmercury
- Incorporate current studies measuring subtle neurobehavioral effects on developing fetuses and young children
- Special concern and advice for pregnant women and young children

MERCURY UNDER THE CHILDREN'S ENVIRONMENTAL HEALTH PROTECTION PROGRAM (SB 25)

- OEHHA summarized scientific studies on mercury compounds showing children's sensitivity to mercury exposure
- ARB Science Review Board placed mercury in the second tier of compounds due to relatively low air exposure

MERCURY UNDER THE TOXIC AIR CONTAMINANT PROGRAM

- OEHHA developed toxicity criteria for airborne mercury compounds
- Reference Exposure Levels (REL) for inorganic mercury and mercury compounds for neurotoxic effects
 - Chronic REL = $0.9 \mu\text{g}/\text{m}^3$
 - Acute REL = $1.8 \mu\text{g}/\text{m}^3$

MERCURY UNDER THE PUBLIC HEALTH GOALS PROGRAM

- Mercury chloride a possible human carcinogen
- Public Health Goal (PHG) for inorganic mercury is based on kidney toxicity
- PHG = 0.0012 mg/L (1.2 ppb) in drinking water

MERCURY UNDER PROPOSITION 65

- Chemicals are listed under Proposition 65 if they are known to cause CANCER or REPRODUCTIVE TOXICITY (including developmental, male reproductive and female reproductive effects)
 - Methylmercury compounds – listed for cancer 5/1/96
 - Methylmercury – listed for developmental toxicity 7/1/87
 - Mercury and mercury compounds – listed for developmental toxicity 7/1/90
- Two provisions of the statute apply to listed chemicals:
 - WARNINGS are required for deliberate exposures above specified levels
 - DISCHARGES to sources of drinking water are PROHIBITED above the same specified levels

MERCURY UNDER PROPOSITION 65

(cont)

- The specified levels that are the thresholds for the warning requirement and discharge prohibition are:
 - CANCER – a 10^{-5} risk level (i.e., a level of exposure that is expected to cause no more than one excess case of cancer per 100,000 exposed individuals in a population with lifetime exposure)
 - REPRODUCTIVE TOXICITY – a level at which there would be no observable reproductive effect given an exposure 1,000 time higher (i.e., a NOEL/1,000)
- To date, all issues that have arisen under Proposition 65 have related to the warning requirement – no issues so far have been related to discharges to sources of drinking water

CARCINOGENICITY OF METHYLMERCURY UNDER PROPOSITION 65

- "Methylmercury compounds" are listed as carcinogens in California
 - Methylmercury chloride caused kidney tumors in three studies of male mice
 - Methylmercury compounds were observed to be genotoxic, causing primarily chromosomal damage
 - No cancer potency estimate for methylmercury has been promulgated by OEHHA